

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

**1-18. (canceled).**

**19. (new):**

A method to reduce the driving voltage of a device comprising a smectic A liquid crystal composition and to enhance dynamic light scattering of the composition, said method comprising doping a smectic A liquid crystal composition with an ionic dopant comprising a sulfur or a phosphorous containing anion with a cation.

**20. (new):** A device comprising a smectic A liquid crystal composition, wherein the smectic A liquid crystal composition comprises one or more ionic dopants, wherein the ionic dopant comprises a sulfur or a phosphorus containing anion with a cation, wherein the ionic dopant reduces the driving voltage of the device and enhances dynamic light scattering of the composition.

**21. (new):** The device as claimed in claim 20, wherein the device is a display or a light shutter.

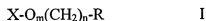
**22. (new):** A method of doping a smectic A liquid crystal composition, comprising adding an ionic dopant to a smectic A liquid crystal composition, wherein the ionic dopant

comprises a sulfur or a phosphorus containing anion with a cation, wherein the ionic dopant reduces the driving voltage of a device comprising the smectic A liquid crystal composition and enhances dynamic light scattering of the composition.

**23. (new):** A smectic A liquid crystal composition, comprising one or more ionic dopants, wherein the ionic dopant comprises a phosphorus containing anion with a cation, wherein the ionic dopant reduces the driving voltage of a device comprising the smectic A liquid crystal composition and enhances dynamic light scattering of the composition.

**24. (new):** The composition as claimed in claim 23, wherein the anion comprises X, and X is one of the following:  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$ ,  $(\text{PO}_3)^{2-}$ ,  $\text{PO}_4\text{H}^-$  or  $(\text{PO}_4)^{2-}$ .

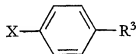
**25. (new):** The composition as claimed in claim 23, wherein the anion is according to formula I:



wherein X is  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$  or  $(\text{PO}_3)^{2-}$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ ,  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano

group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent CH<sub>2</sub>-groups are replaced by an oxygen atom; and p is 0 to 19.

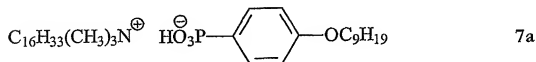
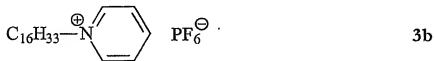
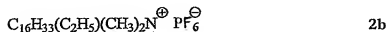
26. (new): The composition as claimed in claim 23, wherein the anion comprises:

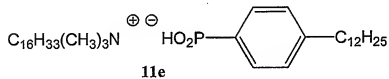
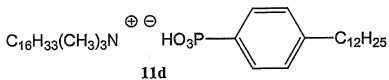
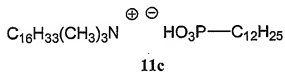
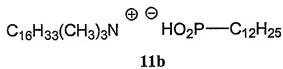
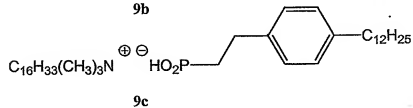
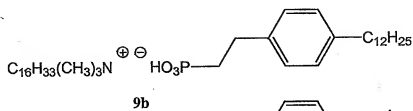


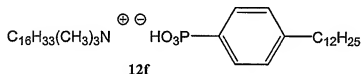
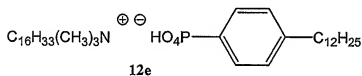
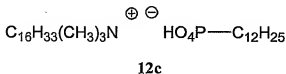
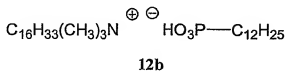
wherein X is PO<sub>3</sub>H<sup>-</sup> or (PO<sub>3</sub>)<sup>2-</sup>, and R<sup>3</sup> is an alkyl or alkoxy chain.

27. (new): The composition as claimed in claim 23, wherein the anion is chiral.

28. (new): The composition as claimed in claim 23, wherein the dopant is:



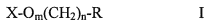




**29. (new):** The composition as claimed in claim 23, wherein the cation is a quaternary ammonium cation.

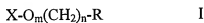
**30. (new):** A smectic A liquid crystal composition, comprising one or more ionic dopants, wherein the ionic dopant comprises a sulfur containing anion with a cation, wherein the ionic dopant reduces the driving voltage of a device comprising the smectic A liquid crystal composition and enhances dynamic light scattering of the composition, wherein:

- (a) the anion comprises X, and X is one of the following: S<sup>-</sup>, SO<sub>2</sub><sup>-</sup>, SO<sub>4</sub><sup>-</sup> or NHSO<sub>3</sub><sup>-</sup>; or
- (b) the anion is according to formula I:



wherein X is S<sup>-</sup>, SO<sub>2</sub><sup>-</sup> or NHSO<sub>3</sub><sup>-</sup>; m is 0 or 1; n is 0 to 19; and R is R<sup>3</sup>, R<sup>1</sup>R<sup>3</sup>, R<sup>1</sup>-(CO<sub>2</sub>)-R<sup>3</sup>, R<sup>1</sup>-(CO<sub>2</sub>)-R<sup>2</sup>R<sup>3</sup>, R<sup>1</sup>-(CH<sub>2</sub>)<sub>p</sub>-R<sup>3</sup>, or R<sup>1</sup>-(CH<sub>2</sub>)<sub>p</sub>-R<sup>2</sup>R<sup>3</sup>; wherein R<sup>1</sup> is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene; R<sup>2</sup> is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene; R<sup>3</sup> is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent CH<sub>2</sub>-groups are replaced by an oxygen atom; and p is 0 to 19; or

(c) the anion is according to formula I:



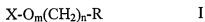
wherein X is S<sup>-</sup>, SO<sub>2</sub><sup>-</sup>, SO<sub>3</sub><sup>-</sup> or NHSO<sub>3</sub><sup>-</sup>; m is 1; n is 0 to 19; and R is R<sup>3</sup>, R<sup>1</sup>R<sup>3</sup>, R<sup>1</sup>-(CO<sub>2</sub>)-R<sup>3</sup>, R<sup>1</sup>-(CO<sub>2</sub>)-R<sup>2</sup>R<sup>3</sup>, R<sup>1</sup>-(CH<sub>2</sub>)<sub>p</sub>-R<sup>3</sup>, or R<sup>1</sup>-(CH<sub>2</sub>)<sub>p</sub>-R<sup>2</sup>R<sup>3</sup>; wherein R<sup>1</sup> is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene; R<sup>2</sup> is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene; R<sup>3</sup> is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent CH<sub>2</sub>-groups are replaced by an oxygen atom; and p is 0 to 19; or

(d) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$  or  $\text{NHSO}_3^-$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^2\text{R}^3$ , or  $\text{R}^1-(\text{CH}_2)_p-\text{R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(e) the anion is according to formula I:



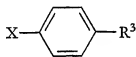
wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$  or  $\text{NHSO}_3^-$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^2\text{R}^3$ ,  $\text{R}^1-(\text{CH}_2)_p-\text{R}^3$ , or  $\text{R}^1-(\text{CH}_2)_p-\text{R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(f) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$  or  $\text{NHSO}_3^-$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ ,  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(g) the anion comprises:

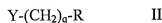


wherein X is  $\text{SO}_3^-$ , and  $\text{R}^3$  is an alkoxy chain; or

(h) the anion is chiral; or

(i) the cation is based on an N,N'-dialkylimidazole, an N,N'-dialkylbenzimidazole, an N,N'-dialkyltriazole, an N-alkylquinuclidine or an N-alkylazanaphthalene; or

(j) the cation is according to formula II:





wherein Y is  $\text{NR}^4\text{R}^5\text{R}^6$  wherein  $\text{R}^4$ ,  $\text{R}^5$  and  $\text{R}^6$  is in every instance an alkyl group or an alkyl chain containing 0 to 5 carbon atoms, N-alkylimidazoles, N-alkylbenzimidazoles, N-alkyltriazoles, alkylquinuclidines or alkylazanaphthalenes; q is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ ,  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

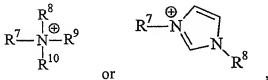
(k) the cation is according to formula II:



wherein Y is  $\text{NR}^4\text{R}^5\text{R}^6$  wherein  $\text{R}^4$ ,  $\text{R}^5$  and  $\text{R}^6$  is in every instance an alkyl group or an alkyl chain containing 0 to 5 carbon atoms, pyridines, N-alkylimidazoles, N-alkylbenzimidazoles, N-alkyltriazoles, alkylquinuclidines or alkylazanaphthalenes; q is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ ,  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a

biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a cyano group, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $CH_2$ -groups are replaced by an oxygen atom; and  $p$  is 0 to 19; or

(l) the cation is:

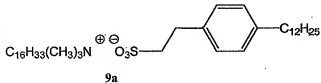
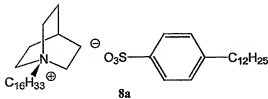
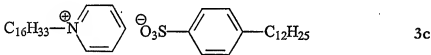
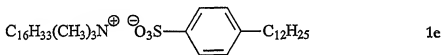


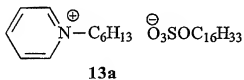
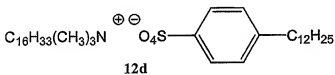
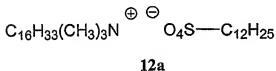
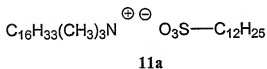
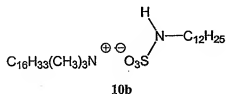
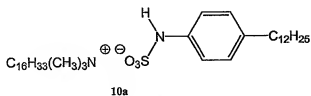
where  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  are alkyl chains; or

(m) the cation is *n*-hexadecyltrimethylammonium (HTMA) or *n*-hexadecyldimethylethyl-ammonium (HDME); or

(n) the cation is chiral; or

(o) the dopant is:





**31. (new):** The composition as claimed in claim 30, wherein the cation is a quaternary ammonium cation.

**32. (new):** A method to reduce the driving voltage of a device comprising a smectic A liquid crystal composition and to enhance dynamic light scattering of the composition, said method comprising doping a smectic A liquid crystal composition with an ionic dopant comprising a quaternary ammonium cation with an anion.

**33. (new):** A device comprising a smectic A liquid crystal composition, wherein the smectic A liquid crystal composition comprises one or more ionic dopants, wherein the ionic dopant comprises a quaternary ammonium cation with an anion, wherein the ionic dopant reduces the driving voltage of the device and enhances dynamic light scattering of the composition.

**34. (new):** The device as claimed in claim 33, wherein the device is a display or a light shutter.

**35. (new):** A method of doping a smectic A liquid crystal composition, comprising adding an ionic dopant to a smectic A liquid crystal composition, wherein the ionic dopant comprises a quaternary ammonium cation with an anion, wherein the ionic dopant reduces the driving voltage of a device comprising the smectic A liquid crystal composition and enhances dynamic light scattering of the composition.

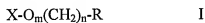
**36. (new):** A smectic A liquid crystal composition, comprising one or more ionic dopants, wherein the ionic dopant comprises a quaternary ammonium cation with an anion, wherein the ionic dopant reduces the driving voltage of a device comprising the smectic A liquid crystal composition and enhances dynamic light scattering of the composition, wherein:

- (a) the anion is a phosphorus containing anion; or
- (b) the anion comprises X, and X is one of the following:  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_4^-$ ,  $\text{NHSO}_3$ ,  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$ ,  $(\text{PO}_3)^{2-}$ ,  $\text{PO}_4\text{H}^-$  or  $(\text{PO}_4)^{2-}$ ; or
- (c) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{NHSO}_3^-$ ,  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$  or  $(\text{PO}_3)^{2-}$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^2\text{R}^3$ ,  $\text{R}^1-(\text{CH}_2)_p-\text{R}^3$ , or  $\text{R}^1-(\text{CH}_2)_p-\text{R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

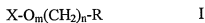
- (d) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$ ,  $\text{NHSO}_3^-$ ,  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$  or  $(\text{PO}_3)^{2-}$ ; m is 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^3$ ,  $\text{R}^1-(\text{CO}_2)-\text{R}^2\text{R}^3$ ,  $\text{R}^1-(\text{CH}_2)_p-\text{R}^3$ , or  $\text{R}^1-(\text{CH}_2)_p-\text{R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an

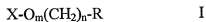
aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(e) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$ ,  $\text{NHSO}_3^-$ ,  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$  or  $(\text{PO}_3)^{2-}$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

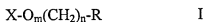
(f) the anion is according to formula I:



wherein X is  $\text{S}^-$ ,  $\text{SO}_2^-$ ,  $\text{SO}_3^-$ ,  $\text{NHSO}_3^-$ ,  $\text{POH}^-$ ,  $\text{PO}_2\text{H}^-$ ,  $\text{PO}_3\text{H}^-$  or  $(\text{PO}_3)^{2-}$ ; m is 0 or 1; n is 0 to 19; and R is  $\text{R}^3$ ,  $\text{R}^1\text{R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^3$ ,  $\text{R}^1\text{-(CO}_2\text{)-R}^2\text{R}^3$ ,  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^3$ , or  $\text{R}^1\text{-(CH}_2\text{)}_p\text{-R}^2\text{R}^3$ ; wherein  $\text{R}^1$  is a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $\text{R}^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted

biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $CH_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(g) the anion is according to formula I:



wherein X is  $S^-$ ,  $SO_2^-$ ,  $SO_3^-$ ,  $NHSO_3^-$ ,  $POH^-$ ,  $PO_2H^-$ ,  $PO_3H^-$  or  $(PO_3)^{2-}$ ; m is 0 or 1; n is 0 to 19; and R is  $R^3$ ,  $R^1R^3$ ,  $R^1-(CO_2)-R^3$ ,  $R^1-(CO_2)-R^2R^3$ ,  $R^1-(CH_2)_p-R^3$ , or  $R^1-(CH_2)_p-R^2R^3$ ; wherein  $R^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a hydrogen, a cyano group, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $CH_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(h) the anion comprises:

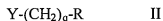


wherein X is  $SO_3^-$ ,  $PO_3H^-$  or  $(PO_3)^{2-}$ , and  $R^3$  is an alkoxy chain; or

(i) the anion is chiral; or

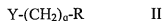
(j) the cation is based on an N,N'-dialkylimidazole, an N,N'-dialkylbenzimidazole, an N,N'-dialkyltriazole, an N-alkylquinuclidine or an N-alkylazanaphthalene; or

(k) the cation is according to formula II:



wherein Y is  $NR^4R^5R^6$  wherein  $R^4$ ,  $R^5$  and  $R^6$  is in every instance an alkyl group or an alkyl chain containing 0 to 5 carbon atoms, N-alkylimidazoles, N-alkylbenzimidazoles, N-alkyltriazoles, alkylquinuclidines or alkylazanaphthalenes; q is 0 to 19; and R is  $R^3$ ,  $R^1R^3$ ,  $R^1-(CO_2)-R^3$ ,  $R^1-(CO_2)-R^2R^3$ ,  $R^1-(CH_2)_p-R^3$ , or  $R^1-(CH_2)_p-R^2R^3$ ; wherein  $R^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a hydrogen, a cyano group, an alkyl chain, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $CH_2$ -groups are replaced by an oxygen atom; and p is 0 to 19; or

(l) the cation is according to formula II:

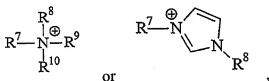


wherein Y is  $NR^4R^5R^6$  wherein  $R^4$ ,  $R^5$  and  $R^6$  is in every instance an alkyl group or an alkyl chain containing 0 to 5 carbon atoms, pyridines, N-alkylimidazoles, N-alkylbenzimidazoles, N-alkyltriazoles, alkylquinuclidines or alkylazanaphthalenes; q is 0 to 19; and R is  $R^3$ ,  $R^1R^3$ ,  $R^1-(CO_2)-R^3$ ,  $R^1-(CO_2)-R^2R^3$ ,  $R^1-(CH_2)_p-R^3$ , or  $R^1-(CH_2)_p-R^2R^3$ ; wherein  $R^1$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a



non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^2$  is a phenyl, a substituted phenyl, a biphenyl, a substituted biphenyl, a terphenyl, a substituted terphenyl, an aromatic ring, a non-aromatic ring, a cyclohexyl, a cyclopentyl, a diazine, a bidiazine, a terdiazine, a phenyldiazine, a biphenyldiazine, a naphthalene or an azanaphthalene;  $R^3$  is a cyano group, an alkyl substituted cyclohexyl, an alkenyl chain, or an alkyl chain wherein one or more non-adjacent  $\text{CH}_2$ -groups are replaced by an oxygen atom; and  $p$  is 0 to 19; or

(m) the cation is:

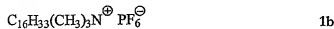


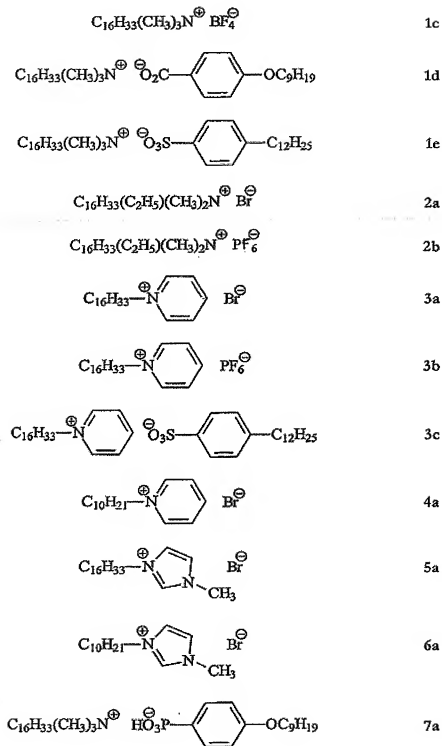
where  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{10}$  are alkyl chains; or

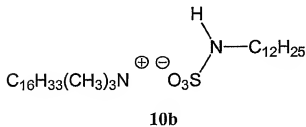
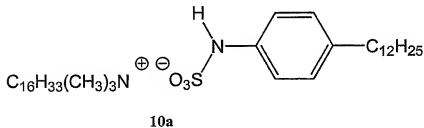
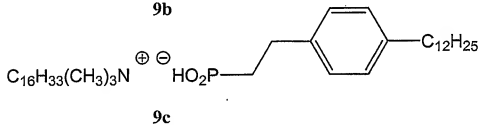
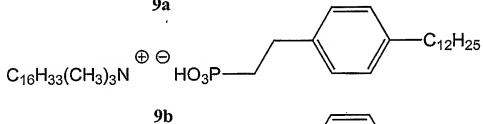
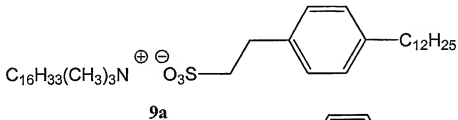
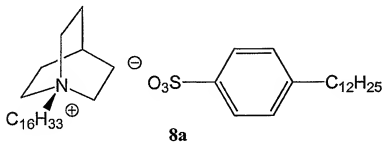
(n) the cation is *n*-hexadecyltrimethylammonium (HTMA) or *n*-hexadecyldimethylethyl-ammonium (HDME); or

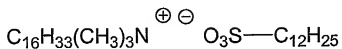
(o) the cation is chiral; or

(p) the dopant is:









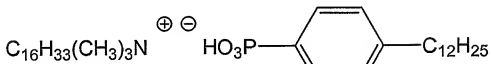
**11a**



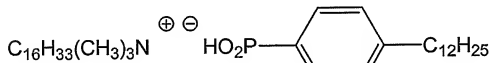
**11b**



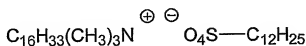
**11c**



**11d**



**11e**



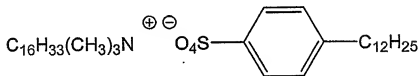
**12a**



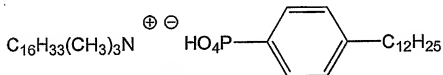
**12b**



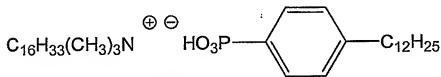
**12c**



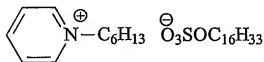
**12d**



**12e**



**12f**



**13a**

**37. (new):** The composition as claimed in claim 36, wherein the anion is a sulfur or a phosphorus containing anion.